VQ 60

Product Description

The VQ 60 is a full range, three-way loudspeaker system designed for applications which require very high output capability with class leading pattern control. The VQ 60 is perfectly suited for use in arrays or singly in demanding music or speech applications.

Unlike line array solutions, the VQ 60 can produce enough power and clarity to be used individually maintaining your building's aesthetics.

With low frequency extension to 90Hz, the VQ 60 can be combined with various subwoofers for extended bandwidth.

The VQ 60 can be configured for use in Bi-Amp or Tri-Amp mode, in conjunction with a suitable digital signal processor (DSP).

Horn design involves balancing compromise…..until now.

Key performance parameters that can be controlled by the designer include: frequency response (both on and off-axis), horizontal and vertical beamwidth, directivity index,electrical impedance, harmonic distortion, and low frequency cut-off. Our unique approach in keeping what is effectively a Dual Concentric behind a single horn gives us many performance advantages. Performance of the VQ 60 in terms of accuracy & sound quality is secondto none.

The VQ 60 incorporates a unique driver technology to radiate a coherent single point source for superior dispersion control when coupled to a PSW™ (Point Source Waveguide). This advanced design aligns the acoustical centres of the transducers providing a single coherentwavefront emanating from the throat. The PSW™ waveguide achieves an optimum balanceof extremely well controlled coverage, smooth frequency response, and natural sound character.

The low frequency section, two (12”) low frequency transducers, offers high power handling and low power compression for high continuous SPL capability. A newly designed LF loading design provides the highest possible sensitivity for low/mid frequency output. The VQ 60 is part of an expanding line up of VQ products, addressing the requirement for compact dimensions without compromising performance in any way.

Features

- “PSW™ Waveguide” - Point source design (Patent applied for).
- Excellent Phase Coherence
- Perfect time alignment without the associated problems of multi source interference
- Compact Dimensions
- Class leading directivity characteristics
- Extremely high sensitivity, therefore high SPL’s can be achieved with a very modest amount of amplifier power
- Exceptional transient response

Applications

- Large Houses of Worship
- Large Corporate AV applications
- Stadiums & other Sports facilities
- Dance Clubs
- Live sound – concert halls, theatres, open-air venues

VQ 60

TECHNICAL SPECIFICATIONS

System

Frequency Response (-3dB) (1)	115Hz - 23kHz	
Frequency Range (-10dB) (1)	90Hz - 27kHz	
System Sensitivity (1W @1m) (2)		
Bi-Amp		
LF (80Hz - 450Hz)	105dB (2.0V @ 4 Ohms)	
Passive MF/HF (450Hz - 23kHz)	115dB (2.83V @ 8 Ohms)	
Tri-Amp		
LF (80Hz - 450Hz)	105dB (2.0V @ 4 Ohms)	
MF (450Hz - 7kHz)	115dB (2.83V @ 8 Ohms)	
HF (7kHz - 23kHz)	115dB (2.83V @ 8 Ohms)	
Dispersion (-6dB)	60 degrees conical	
Driver Complement		
LF	2 x 300mm (12.00”) Low Frequency Transducers, Semi Horn Loaded	
MF/HF	Dual Concentric™ Compression driver loaded into a single PSW™ Waveguide	
Crossover	Bi-amp 450Hz (active) 7kHz (passive) Tri-amp 450Hz, 7kHz (active)	
Directivity Factor (Q)	21.2 averaged 1kHz to 10kHz	
Directivity Index (DI)	13.3 averaged 1kHz to 10kHz	
Rated Maximum SPL (2)		
	Average	Peak
Low Frequency	135dB	141dB
Mid Frequency	138dB	144dB
High Frequency	135dB	141dB
Passive MF/HF	138dB	144dB
Power Handling (3)		
	Average	Peak
LF @ 4 Ohms	1000W (63.3V)	2000W
MF @ 8 Ohms	200W (40V)	400W
HF @ 8 Ohms	90W (27V)	180W
Passive MF/HF @ 8 Ohms	200W (40V)	400W

Recommended Amplifier Power	
Low Frequency	2000W into 4 Ohms
Mid Frequency	400W into 8 Ohms
High Frequency	200W into 8 Ohms
Passive MF/HF	400W into 8 Ohms
Nominal Impedance	
Low Frequency	4 Ohms (4.1 Ohms Minimum)
Mid Frequency	8 Ohms (7.0 Ohms Minimum)
High Frequency	8 Ohms (8.7 Ohms Minimum)

Construction

Enclosure	18mm (0.71") birch plywood. Vented and internally braced.
Grille	Powder coated perforated steel grille
Finish	Black or white textured paint (custom colours on request)
Connectors	Barrier Strip
Fittings	8 x Recessed carrying handles 12 x M10 flying inserts
Dimensions	925mm x 694mm x 515mm (36.42" x 27.32" x 20.28")
NET Weight	77kg (170.0 lbs)

Notes:
(1) Average over stated bandwidth. Measured at 3 metres on axis, then referred to 1 metre
(2) Unweighted pink noise input, measured at 3 metres in an anechoic chamber, then referred to 1 metre
(3) Accelerated Life Test (EIA RS426-B)\

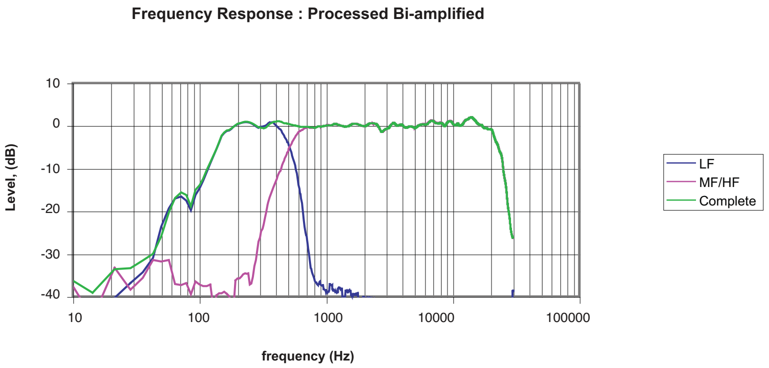
A full range of measurements, performance data, CLF and Ease™ Data can be downloaded from www.tannoy.com

Full independent verification of published specifications carried out by NWAA Labs, California can also be obtained from the downloads section of www.tannoy.com
Tannoy operates a policy of continuous research and development. The introduction of new materials or manufacturing methods will always equal or exceed the published specifications, which Tannoy reserves the right to alter without prior notice. Please verify the latest specifications when dealing with critical applications.

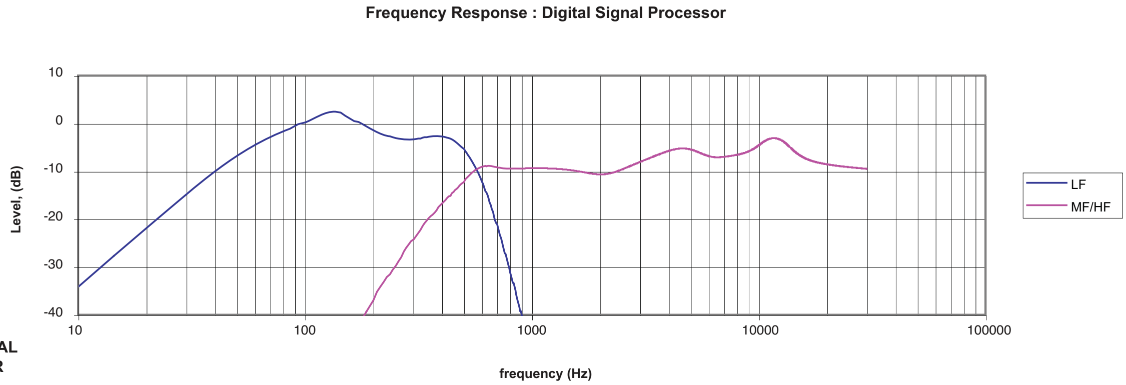
Ordering Information

PART NUMBER	MODEL NAME	COLOUR	PACKED QUANTITY
8001 4800	VQ 60	BLACK	1

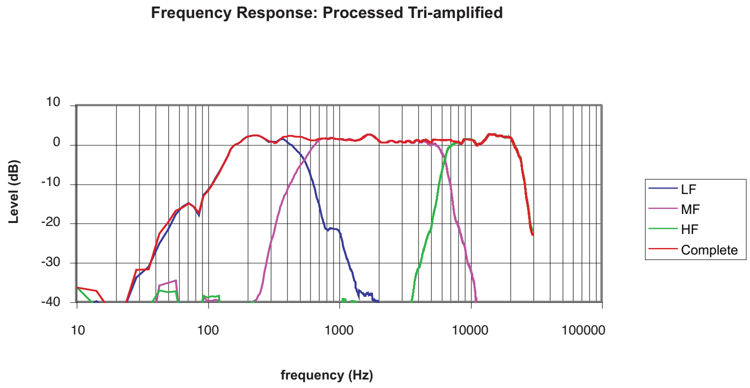
PERFORMANCE MEASUREMENTS



ANECHOIC FREQUENCY RESPONSE (BI-AMP MODE)



ELECTRICAL TRANSFER FUNCTION FOR OPTIMAL OPERATION (BI-AMP MODE)

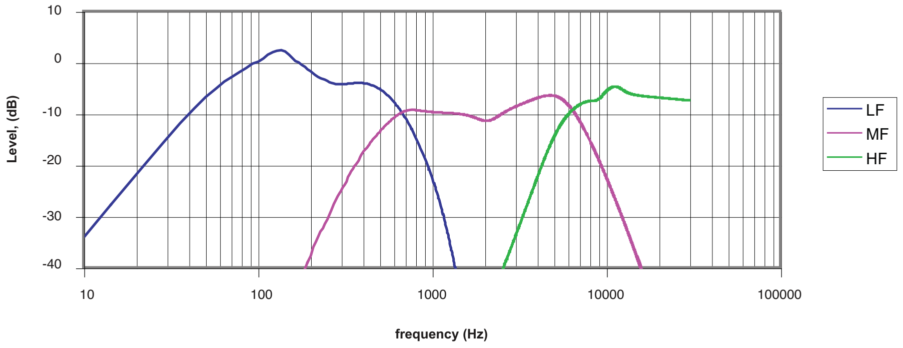


ANECHOIC FREQUENCY RESPONSE (TRI-AMP MODE)

VQ 60

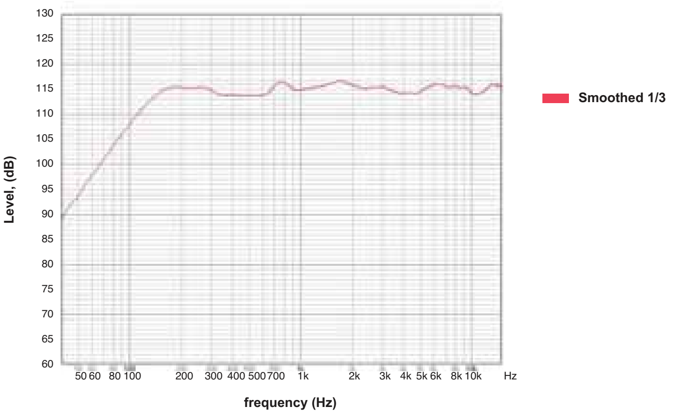
PERFORMANCE MEASUREMENTS

Frequency Response: Digital Signal Processor



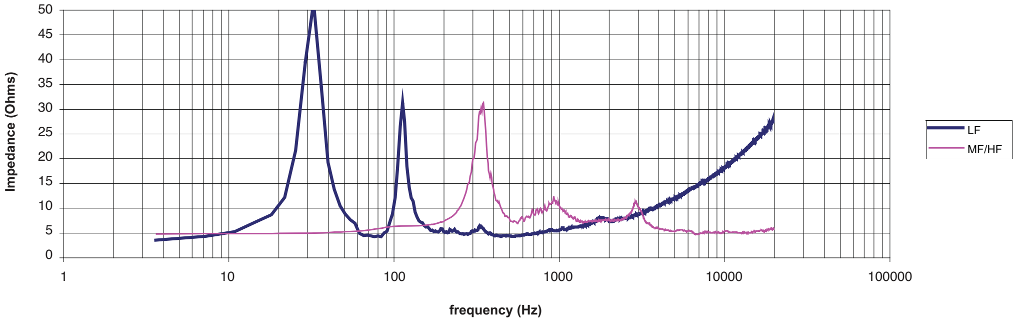
ELECTRICAL TRANSFER FUNCTION FOR OPTIMAL OPERATION (TRI-AMP MODE)

VQ 60 Active 2 way_3.6v, 4.01m. 1kHz, 8 Ohms_Setup w processing 9 (1/19) Smoothed 1/3 (Full IR)



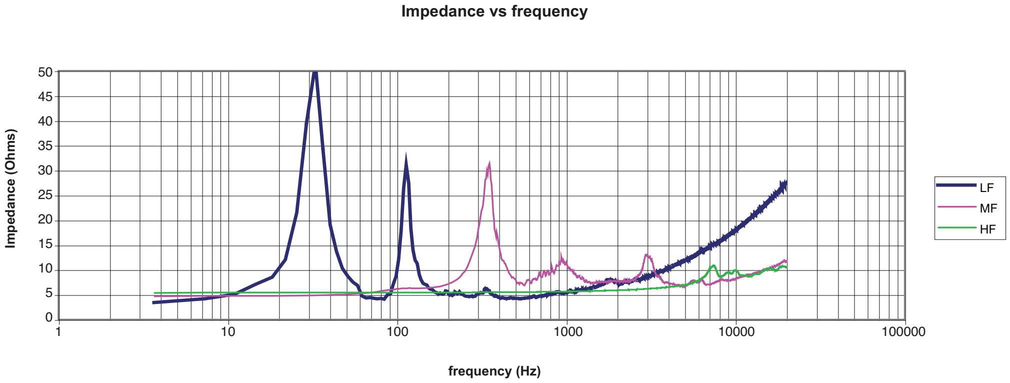
SENSITIVITY (LF RAISED +10dB)

Impedance vs frequency

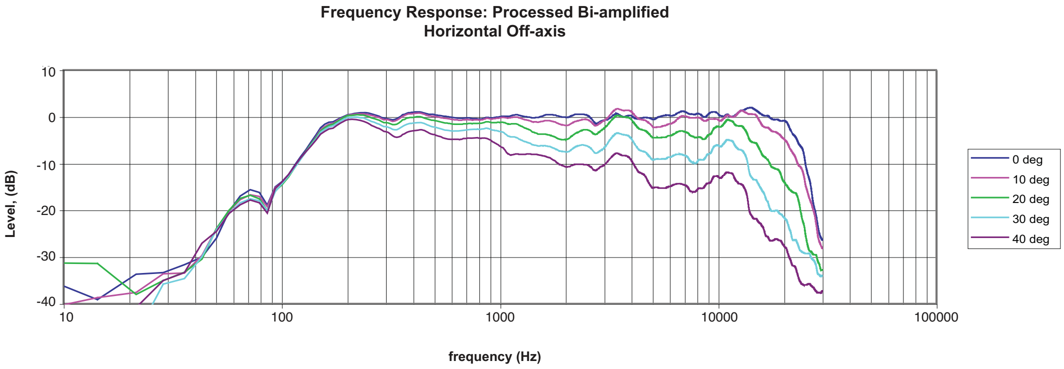


IMPEDANCE (BI-AMP MODE)

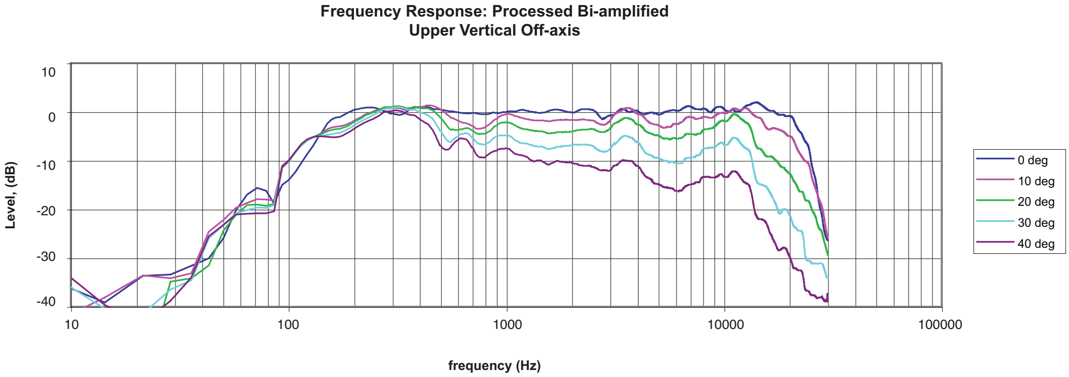
PERFORMANCE MEASUREMENTS


Impedance vs frequency

IMPEDANCE
(TRI-AMP MODE)


Frequency Response: Processed Bi-amplified
Horizontal Off-axis

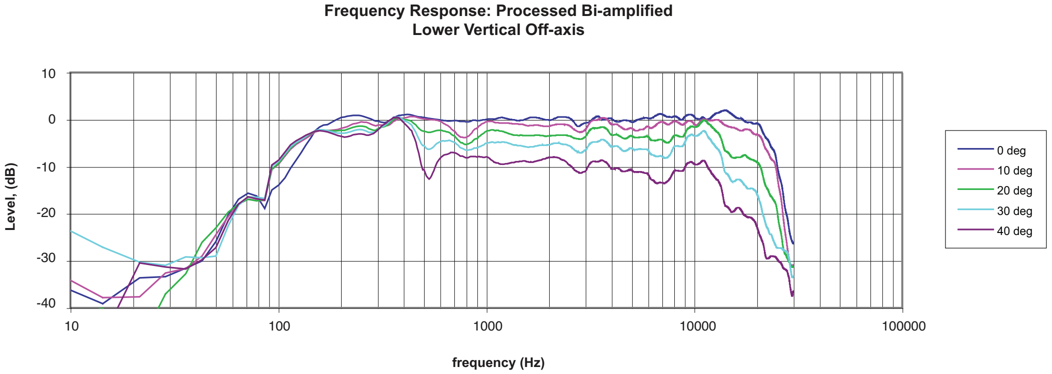
HORIZONTAL
OFF AXIS
RESPONSE
(BI-AMP MODE)


Frequency Response: Processed Bi-amplified
Upper Vertical Off-axis

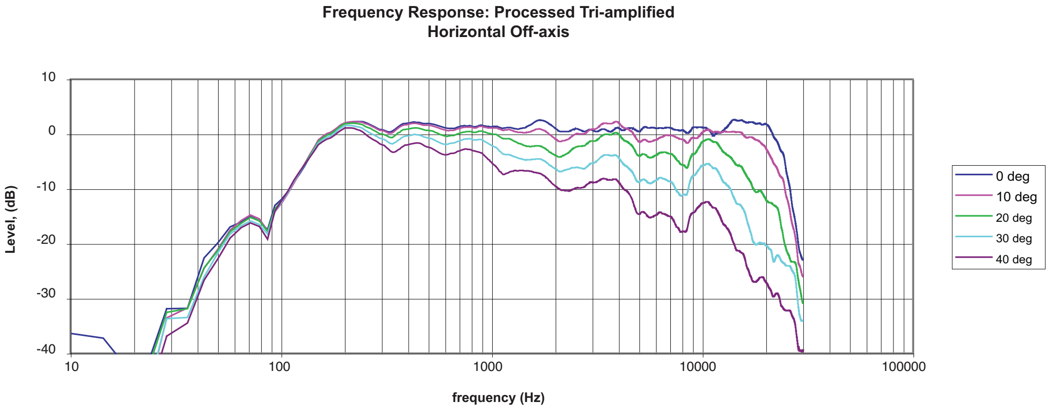
VERTICAL
UPPER
OFF AXIS
RESPONSE
(BI-AMP MODE)

VQ 60

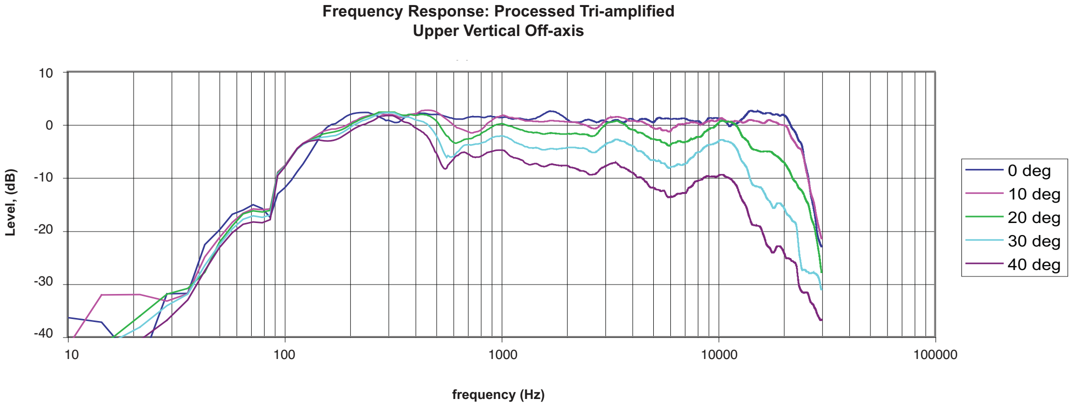
PERFORMANCE MEASUREMENTS



**VERTICAL
LOWER
OFF AXIS
RESPONSE
(BI-AMP MODE)**

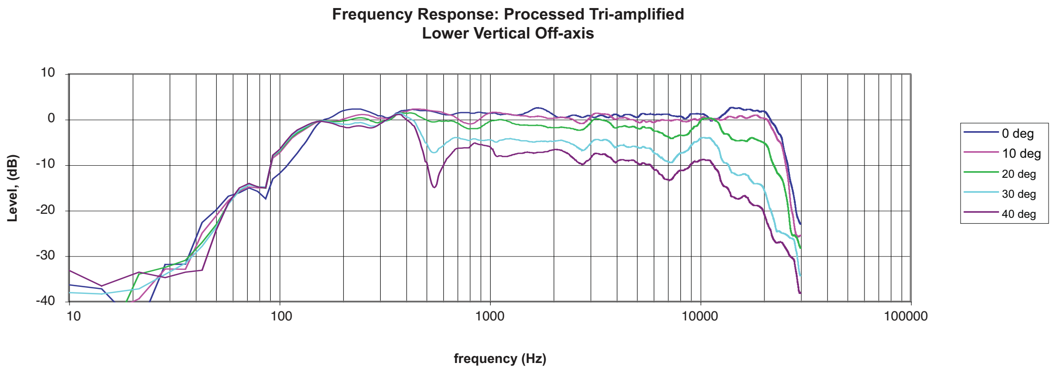


**HORIZONTAL
OFF AXIS
RESPONSE
(TRI-AMP MODE)**

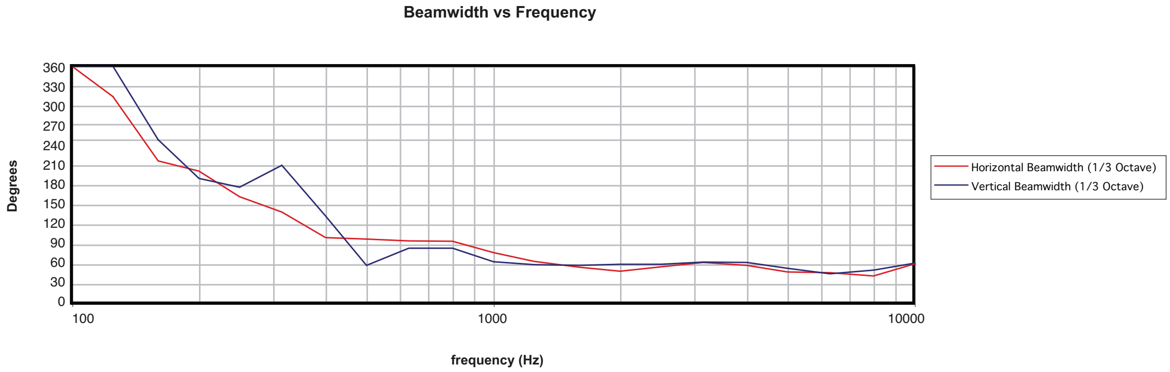


**VERTICAL
UPPER
OFF AXIS
RESPONSE
(TRI-AMP MODE)**

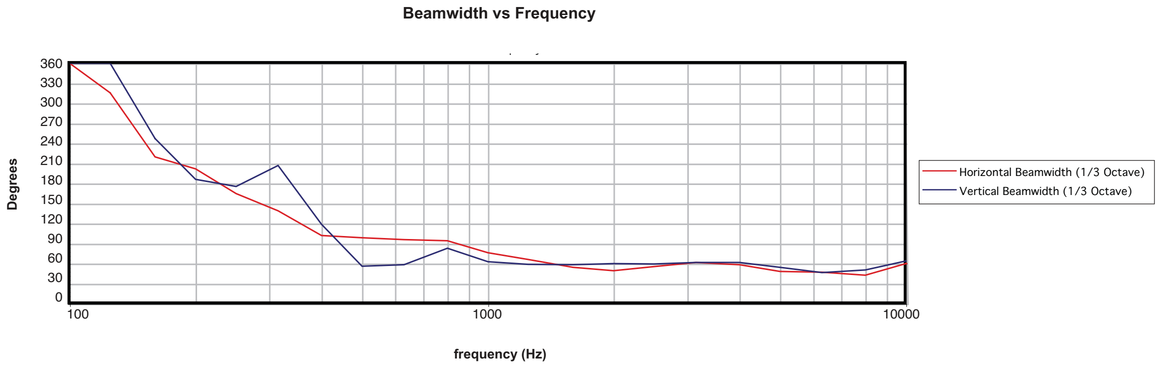
PERFORMANCE MEASUREMENTS



VERTICAL LOWER OFF AXIS RESPONSE (TRI-AMP MODE)

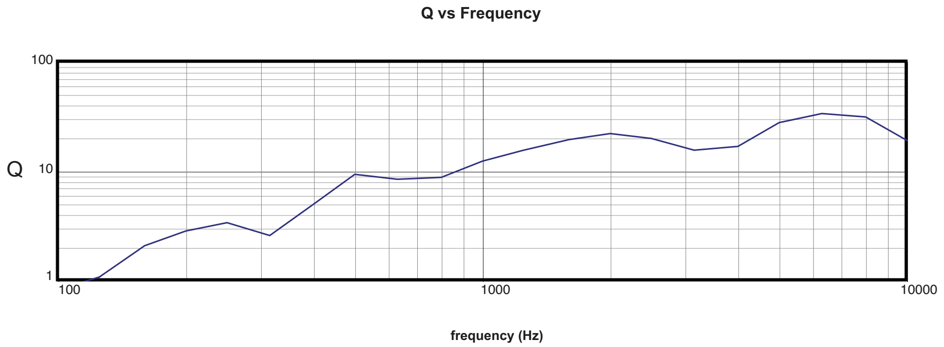


BEAMWIDTH (BI-AMP MODE)

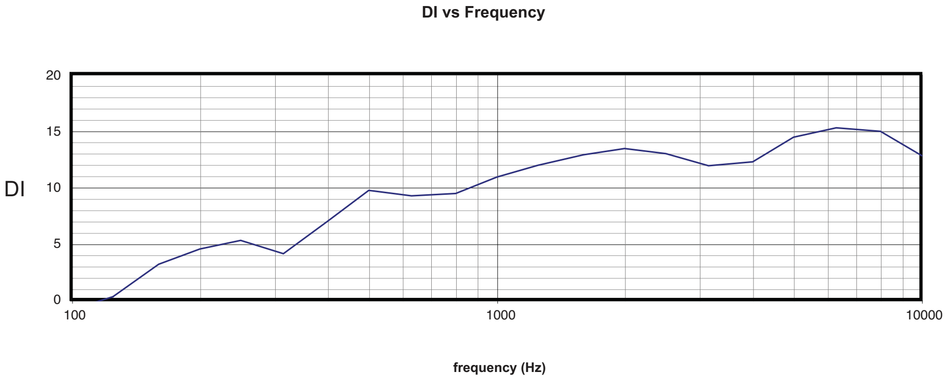


BEAMWIDTH (TRI-AMP MODE)

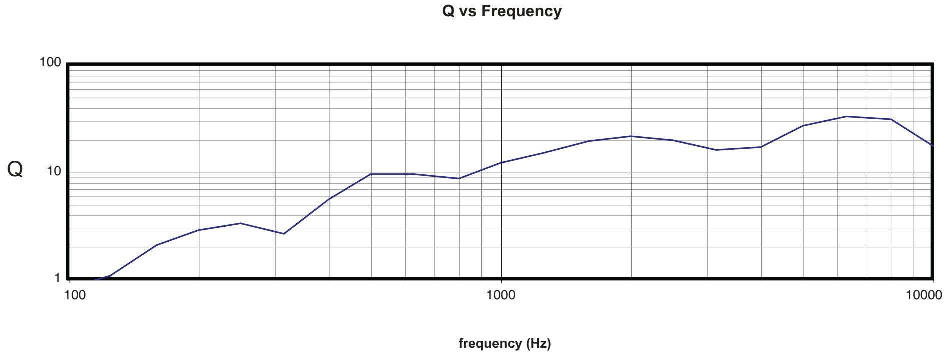
PERFORMANCE MEASUREMENTS



Q VS FREQUENCY
(BI-AMP MODE)

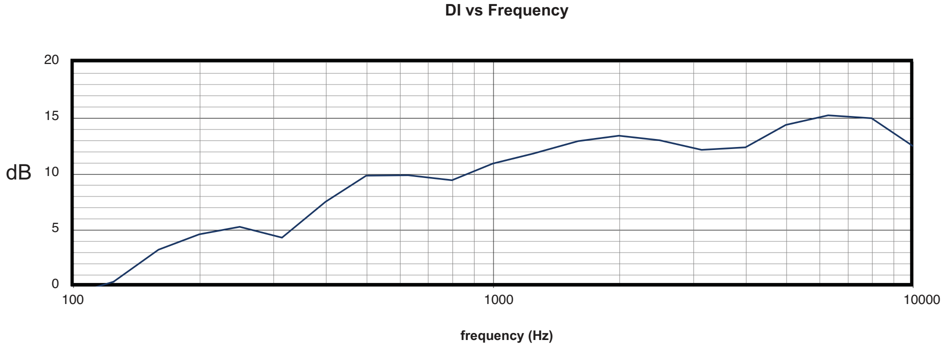


DIRECTIVITY INDEX
(BI-AMP MODE)



Q VS FREQUENCY
(TRI-AMP MODE)

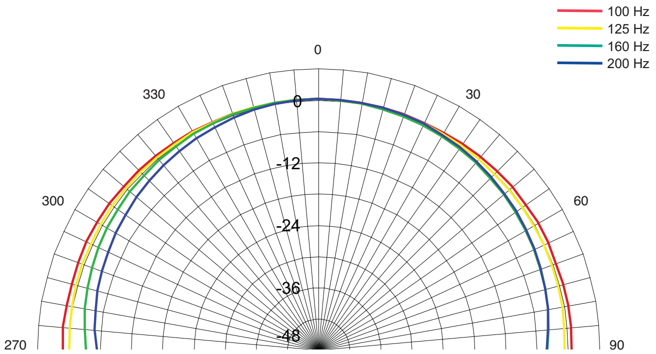
PERFORMANCE MEASUREMENTS

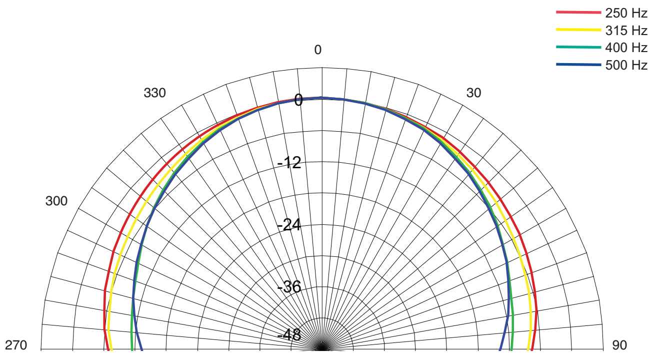


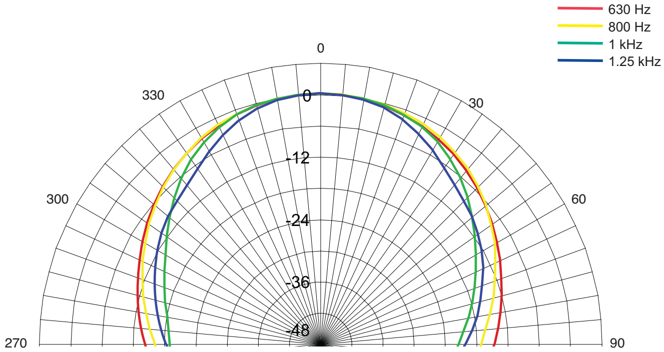
DIRECTIVITY INDEX
(TRI-AMP MODE)

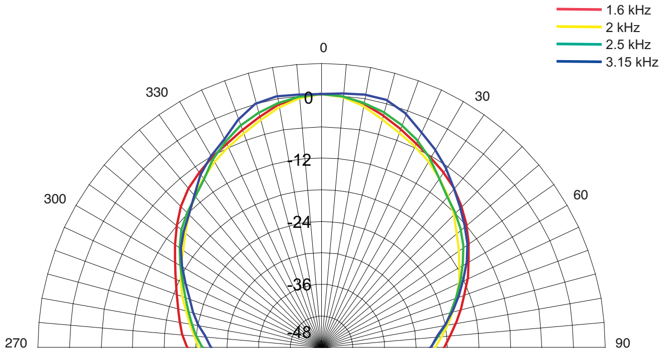
VQ 60

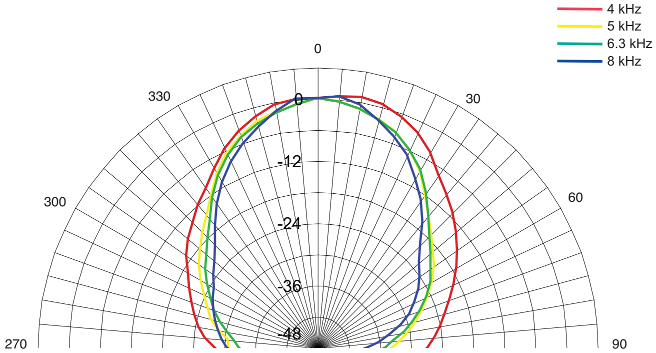
PERFORMANCE MEASUREMENTS POLAR PLOTS (1/3 OCTAVE) Bi-Amp Mode

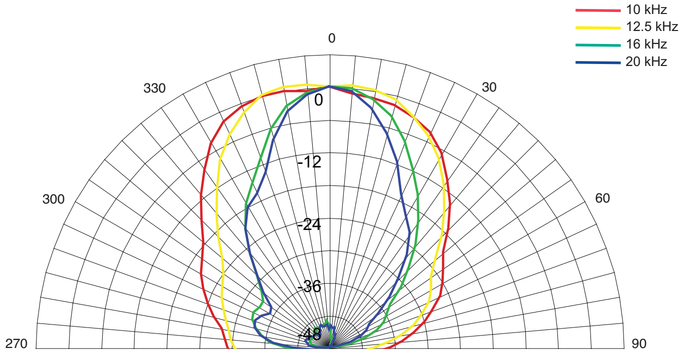




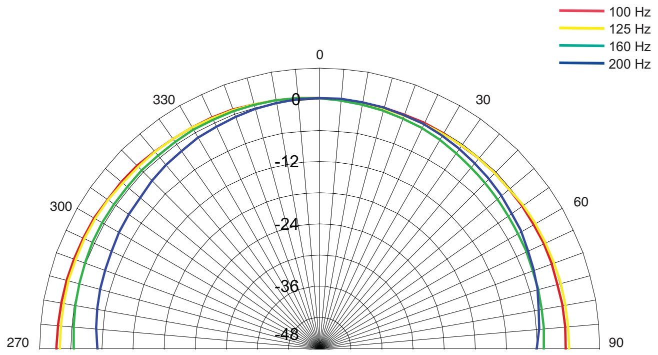


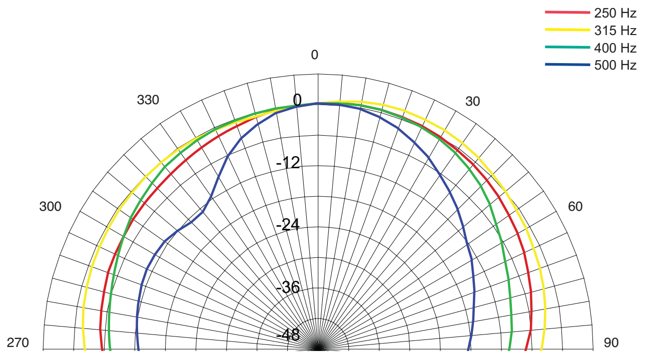


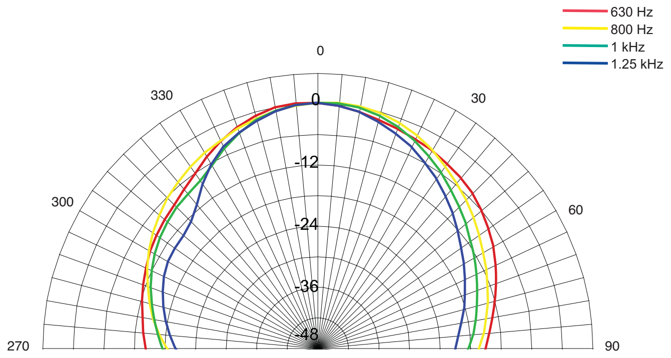


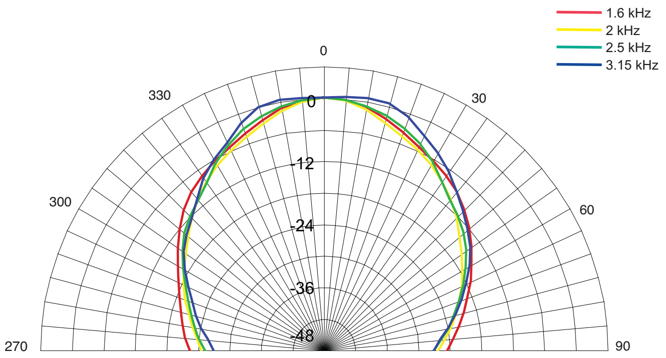


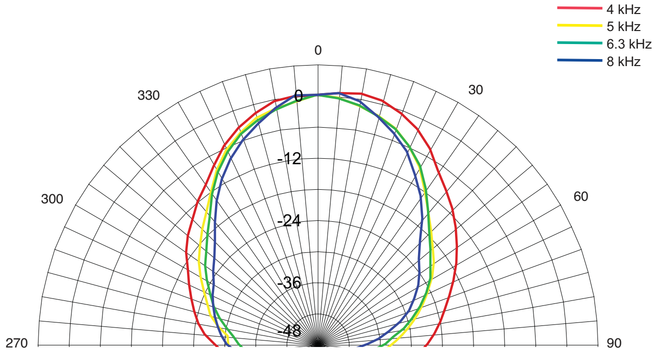
PERFORMANCE MEASUREMENTS POLAR PLOTS (1/3 OCTAVE) Bi-Amp Mode

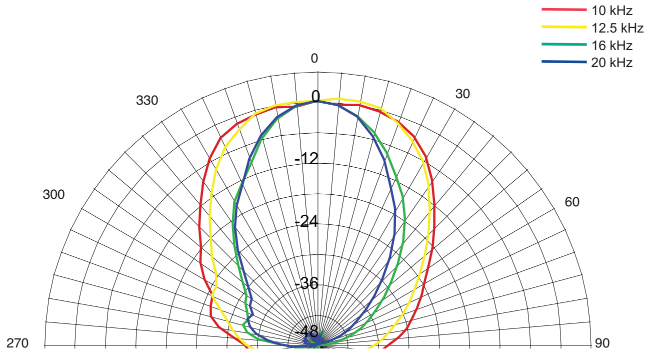




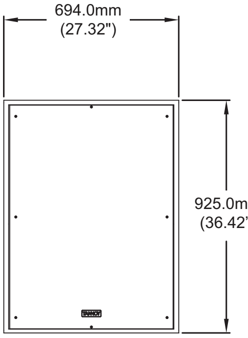


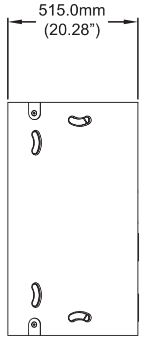


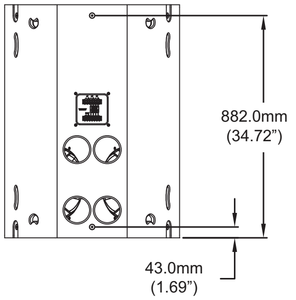


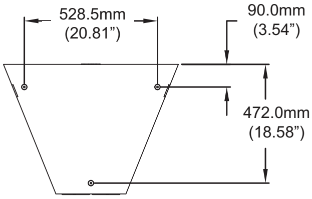


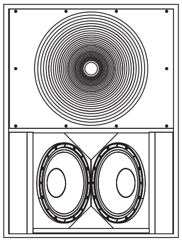
DIMENSIONAL SKETCHES

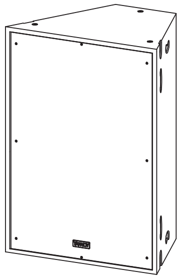




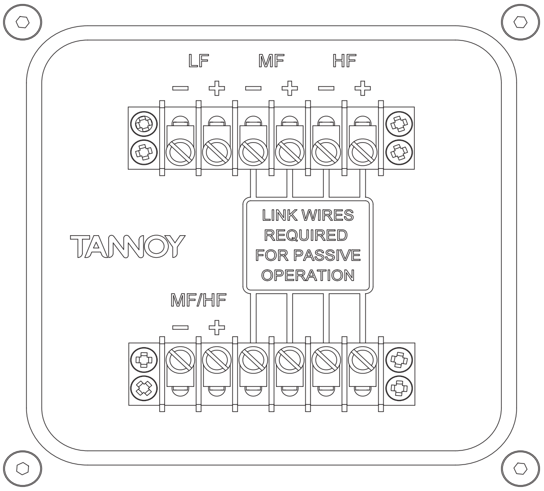




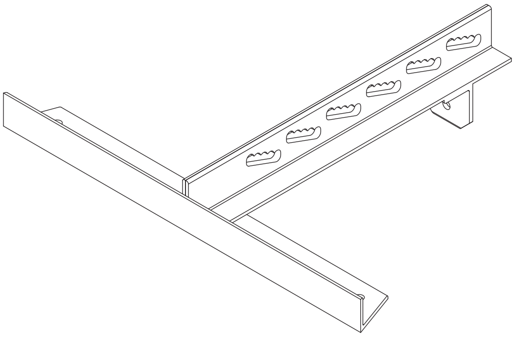




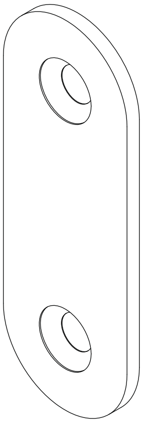
INPUT PANEL



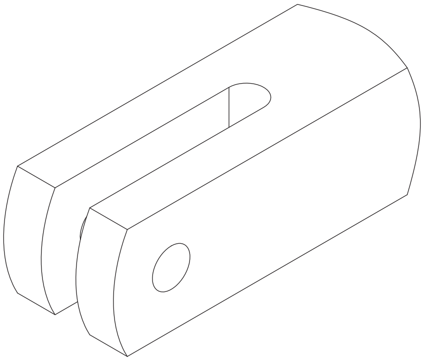
OPTIONAL ACCESSORIES



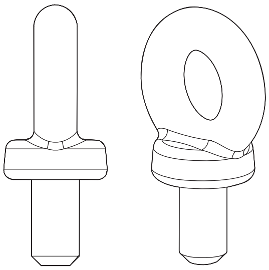
VQ FLYING BRACKET
(SINGLE POINT HANGING BRACKET)



VQ LINK (LINK PLATE)



VQ ROD END



VEB FORGED EYEBOLT

Ordering Information

PART NUMBER	MODEL NAME	COLOUR	PACKED QUANTITY
5470 0220	VQ Flying Bracket (Single Point Hanging Bracket)	BLACK	1
5470 0221	VQ Link (Link Plate)	BLACK	1
5470 0223	VQ Rod End	BLACK	1
8001 2820	VEB Forged Eyebolt	-	1

Architectural specifications

The loudspeaker shall consist of a Dual Concentric™ Compression driver with a 3.5" Midrange voice coil and a 2" High Frequency voice coil, both mounted in a common subsystem with a common 2" exit. This Dual Concentric™ compression driver shall be coupled to a PSW™ (Point Source Waveguide) constant directivity horn operating over the frequency range of 450Hz to 23kHz. The low frequency section consists of two 12" (300mm) woofers, and shall be mounted in a semi-horn loaded enclosure to provide significant off axis attenuation below 450Hz. The loudspeaker shall be user configurable for either Bi-Amp of Tri-Amp operation via the rear input panel. The loudspeaker shall be trapezoidal in shape.

Performance of the loudspeaker, using the recommended electronic control shall meet or exceed the following criteria:
The Low Frequency section shall produce a sound pressure level of 105dB SPL on axis at 1 meter with a power input of 1 Watt, and shall be capable of producing a peak output of 141dB SPL on axis at 1 meter. In Bi-amp mode the Mid/High section shall produce a sound pressure level of 115dB SPL on axis at 1 meter with a power input of 1 Watt, and shall be capable of producing a peak output of 144dB SPL on axis at 1 meter. In Tri-amp mode the Mid frequency section shall produce a sound pressure level of 115dB SPL on axis at 1 meter with a power input of 1 Watt, and shall be capable of producing a peak output of 144dB SPL on axis at 1 meter. The High Frequency section shall produce a sound pressure level of 115dB SPL on axis at 1 meter with a power input of 1 Watt, and shall be capable of producing a peak output of 141 dB SPL on axis at 1 meter. The Low Frequency section shall handle 1000 Watts of amplifier power and shall have a nominal impedance of 4 Ohms. In Bi-amp mode the Mid/High section shall handle 400 Watts of amplifier power and shall have a nominal impedance of 8 Ohms. In Tri-amp mode the Mid frequency section shall handle 400 Watts of amplifier power and shall have a nominal impedance of 8 Ohms. The High Frequency section shall handle 180 Watts of amplifier power and shall have a nominal impedance of 8 Ohms. The dispersion of the loudspeaker shall be 60 degrees conical (-6dB). The enclosure shall be of birch plywood construction and internally braced. The enclosure shall be fitted with eight integral carrying handles, and twelve M10 inserts for flying hardware. The enclosure shall not exceed the following dimensions (H x W x D): 925mm x 694mm x 515mm (36.42" x 27.32" x 20.28").

The loudspeaker shall be the Tannoy...VQ 60.

NOTES

NOTES